Microtiter plate based colorimetric assay for characterization of dehalogenation activity of GAC/Fe0 composite

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8:35 – 816. Autoxidation of longifolene and antitermite activity of its products. **A. Mukai***, T. Ashitani, K. Takahashi
9:05 – 817. Manipulation of (*2E*)-hexenal production in plants to elucidate its roles under biotic and abiotic stress conditions. **M. Kunishima**, Y. Yamauchi, M. Mizutani, Y. SUGIMOTO

Hawaii Convention Center
Halls I, II, III

Enzymes Essential to Biosphere Health: Bioremediation and Biogeochemical Cycling (#219)

Organized by: L. Eltis, M. Fukuda, L. Wackett

Poster Session
10:00 – 12:00

818. Expression of the bacterial heavy metal transporter MerC fused with a plant SNARE in *Arabidopsis thaliana* increases mercury accumulation. **M. Kiyono***, Y. Sone, R. Nakamura, Y. Takanezawa, S. Uraguchi
819. Role of Mer in the transport of mercurials in *Escherichia coli*. **Y. Sone**, R. Nakamura, Y. Takanezawa, S. Uraguchi, M. Kiyono*
820. Aerobic reduction of selenite by a filamentous fungus, *Aspergillus oryzae* for selenium recovery and recycling. **T. Sakaguchi***, H. Kimura, M. Nagaoka, T. Arima, Y. Okamura, M. Maeda
821. Identification and characterization of a novel *N*-acylhomoserine lactonase from coagulase-negative staphylococci. **R. Sato***, T. Yamaguchi, N. Someya, T. Ikeda, T. Morohoshi
822. Identification and characterization of a novel *N*-acylhomoserine lactonase from plant-associated bacteria. **T. Yamaguchi**, S. Kikuchi, N. Someya, T. Ikeda, T. Morohoshi
823. Identification and characterization of a novel *N*-acylhomoserine lactone acylase from activated-sludge bacteria. **S. Yasumoto***, S. Ochiai, T. Morohoshi, T. Ikeda
824. Biological hydrolysis and acidification of iron-enhanced primary wastewater sludge under an anaerobic condition: Effects of pH, temperature, and the substrate concentration. **X. Li***, R. Li, H. Li, Y. LI, J. Xu
825. Transformation and products of thiol drugs with the presence of humic substance in water during enzymatic catalysis. P. Du, **H. Zhao**, H. Cao
826. Enzymatic activity of cell-free extract from *Geobacillus* sp. UZO 3 catalyzes reductive cleavage of diaryl ether bonds of 2,3,7,8-TCDD. **M. Nakamura***, Y. Otsuka, Y. Miyazaki, Y. Suzuki, Y. Katayama, T. Kameyama

Hilton Waikiki Beach
Kauai

Fate and Risks of Nanoparticles in Aquatic and Terrestrial Environments (#220)

Organized by: J. Kirby, J. Ranville, Y. Ma, B. Lee

8:00 – 827. Dose and duration of manufactured nanoparticle exposure in ecosystems influences nanoparticle fate and impacts. **B.P. Colman***, L. Baker, C. Matson, R. King, C. Richardson, E. Bernhardt
8:40 – 828. Screening method for the ecotoxicological effects of engineered nanomaterials on microbial communities in terrestrial and aquatic environments. **K.P. Weber***
9:00 – 829. Effects of nanomaterials on soil microbial communities, plant-rhizobia symbiosis, and mycorrhizal colonization of plant roots in biosolid-amended soil. **J. Judy***, J. Kirby, M. McLaughlin, P. Bertsch
9:20 – 830. Determination of uptake and bioaccumulation of multi-walled carbon nanotubes in *Daphnia magna* and *Pimephales promelas* using microwave induced heating. **A.M. Cano***, M. Saed, M. Green, J.D. Maul, J.E. Canas-Carrell
9:40 – 831. Trans-generational impact of silver sulfide nanoparticles on the earthworm *Eisenia fetida*. **J. Kirby**, J. Judy, D. Navaroo
10:00 Break
10:15 – 832. Long-term effects of silver nanoparticles on activated sludge. **Z. Sheng**, J. Zhou, Y. Liu*
10:35 – 833. Carbon nanotube uptake, translocation, and stress effects in corn (Zea mays L) grown in soil. **J.E. Canas-Carrell**, A.M. Cano, M.M. McManus, S. Deleon, F. Irin, P. Payton, M. Green
10:55 – 834. Exposure of *Arabidopsis thaliana* to iron nanoparticles induces the enhancement of photosynthesis as a result of promoted stomatal opening. **H. Yoon**, J. Kim, Y. Kang, Y. Chang*
11:15 Final remarks

Hilton Waikiki Beach
Molokai

Chemistry of Integrated Water Treatment Systems for Halogenated Organics and Long-lived Radionuclides (#454)

Organized by: W. Lee, H. Kim, H. Anderson, M. Diallo, D. Waite
Presiding: W. Lee

8:00 Opening Remark
8:05 – 835. Polymer stabilized nanogold as tracer to use in co-injection with nZVI during in-situ DNAPL remediation. **B. Uthuppu***, A.S. Fjordbøge, M. . Broholm, M.H. Jakobsen
8:35 – 836. Reductive removal of Cr(VI) using zero-valent magnesium under oxygenated circum-neutral pH conditions. J. Park, J. Ahn, J. Kim, **G. Lee***
9:05 – 837. Microtiter plate based colorimetric assay for characterization of dehalogenation activity of GAC/Fe^0 composite. **Y. Hwang***, A. Salatas, P.D. Mines, M.H. Jakobsen, H.R. Andersen
9:35 – 838. Uranium Immobilization in a contaminated soil column by iron phosphate mineral. **W. Lee***, Y. Sihn
10:05 Break
10:15 – 839. Mechanistic understanding of contaminant degradation on the catalyst surface. **H. Kim***, K. Jeon, H. Shin
10:45 – 840. Nanoporous disulfide networks for selective uptake for halogenated organics and ethers. H. Patel, J. Byun, M.S. Yavuz, **C.T. Yavuz**
11:15 – 841. Covalent organic polymer functionalized activated carbon: A novel material for water contaminant removal and CO_2 capture. **P.D. Mines***, D. Thirion, B. Uthuppu, Y. Hwang, M.H. Jakobsen, H.R. Andersen, C.T. Yavuz
11:35 – 842. Simultaneous determination of heavy metal ions in contaminated groundwater by absorption spectrophotometry with Br-PADAP (2-(5-bromo-2-pyridylazo)-5-diethylaminophenol). **T. Kim***, J. Yun
11:55 Closing Remark

Saturday Afternoon

Hilton Waikiki Beach
Territorial III

Pectin Chemistry and Technology (#20)

Organized by: B. Savary, M. Williams, S. Lu, S. Yoo, R. Cameron

13:00 (delay session start)
13:15 Opening
13:20 – 843. Thermostable pectinases for processing pectin-rich food and agricultural biomass – evaluation for *in planta* expression. **B. Savary***, J.C. Tovar, J. Xu, N. Zhang
13:50 – 844. Directed expression of an endo-arabinanase in plants with a designer molecular carrier and colon-endothelium functioning by arabino-oligosaccharide products. **J. Xu**, N. Zhang, B.J. Savary
14:20 – 845. Colon-specific delivery of *Lactobacillus rhamnosus* GG using pectin hydrogel beads. **L. Liu**
14:50 Break
15:00 – 846. Encapsulation of a model compound in pectin delays its release from a biobased polymeric material. **V.L. Finkenstadt***
15:30 – 847. Role of bioactive pectic polysaccharides on intestinal immune system. **H. Yamada***, H. Kiyohara
16:00 – 848. Bioactive pectic oligosaccharide structure function relationships. **A. Hotchkiss***
16:30 Closing

Hilton Waikiki Beach
Hawaii

Human Exposure to Environmental Contaminants (#26)

Organized by: J. Martin, K. Kannan, L. Zhu, H. Moon
Presiding: J. Martin, H. Moon

13:00 – 849. Bisphenol A and its replacement BPS induce precocious neurogenesis and hyperactivity in zebrafish. **D. Kurrasch***, C. Kinch, K. Ibhazehiebo
13:40 – 850. Maternal co-exposure to methylmercury (MeHg) and perfluorooctane sulfonate (PFOS) alters the neurodevelopment of Sprague-Dawley rat pups. **A. Reardon***, K. Fouad, T. Hamilton, J.P. Benskin, B. Chandramouli, J.R. Cosgrove, E. Khodayari, I. Dinu, J. Martin
14:00 – 851. Polybrominated diphenyl ethers and 2,4,6-tribromophenol and their associations with thyroid hormone levels and thyroid sulfotransferase activity in human placental tissues. **H. Stapleton**, C. Leonetti, C. Butt, K. Hoffman, M. Miranda
14:20 – 852. Pesticide residues and dietary risk assessment of pesticides in fruits and vegetables in Beijing, China from 2012 to 2014. n. zou*, c. yu, y. li, Y. Han, y. qin, k. gu, j. zhang, **C. Pan***
14:40 – 853. Using chemical and in-vitro cell-based methods for the presiction of bioavailability of arsenic and cadmium in health risk assessment. **J. Ng***, B.N. Noller, C. Peng, V. Diacomanolis, R. Taga, H. Harris, Q. Xia
15:00 – 854. In vitro demonstration of polycyclic aromatic hydrocarbon uptake, biotransformation and DNA-adduct formation in human liver cells. **V. LAL***, C. Peng, M. Fletcher, S. Were, J. Ng
15:20 – 855. Human and environmental risk assessment: A chemical fugacity and activity approach. **F.A. Gobas**, D. Mackay, J.A. Arnot
15:40 – 856. Biomonitoring persistent organic pollutants and emerging contaminants in breast milk from Korea. **S. Lee***, s. kim, j. park, H. Kim, J. Lee, G. Choi, S. Choi, S. Kim, S. Kim, s. kim, K. Choi, H. Moon
16:00 – 857. Several persistent environmental chemicals among susceptible human populations, and endocrine disruption: Epidemiological observations and experimental evidences. s. kim, S. Kim, H. Kang, J. Jung, H. Moon, s. kim, j. park, **K. Choi***

Hilton Waikiki Beach
Territorial I & II

Recycling of Polymeric Materials: Challenges and Perspectives (#36)

Organized by: T. Yoshioka, K. Joo-Sik, V. Sahajwalla, B. Thallada

13:00 No name
14:00 – 858. Rapid and highly effective conversion of biomass into chemicals and fuels under hydrothermal conditions. **F. Jin***, G. Yao, Z. Huo
14:40 – 859. Biosynthesis of polyhydroxyalkanoates (PHAs) using volatile fatty acids (VFAs) generated from the wastewater sludge of Fe-enhanced primary treatment. **J. Xu***, X. Li, Y. Li, R. Li, L. LIN
15:00 – 860. Production of volatile fatty acids (VFAs) from the wastewater sludge of the Al-enhanced primary treatment. **L. LIN***, X. Li, H. Li, J. Xu, R. Li, Y. LI
15:20 – 861. Status and strategies for effective utilization of lignocellulosic biomass in India: Case study. **B. Thallada***
16:00 – 862. Pyrolysis: a promising process for the utilisation of lignocellulosic biomass in decentralised units. **B.B. Krishna**, B. Biswas , J. Kumar, R. Singh, B. Thallada*
16:20 – 863. Energy recovery from municipal solid waste incineration in Japan. **M. Takaoka***, T. Yokoyama

Hilton Waikiki Beach
Altitude

Chemical Ecology Applied to Sustainable Agriculture (#105)

Organized by: C. Osorio, J. Bento, T. Ando, X. Chen
Presiding: T. Ando, X. Chen

13:00 Introductory Remarks
13:05 – 864. Aluminum oxalate complex as an antimicrobial substance from the active mycorrhizal zone of *Tricholoma matsutake*. **K. Nishino***, M. Shiro, K. Oizumi, R. Okura, T. Fujita, A. Yamada, C. Tanaka, T. Sasamori, N. Tokitoh, N. Hirai
13:35 – 865. Regulatory factors that control asexual reproduction of the plant pathogen *Phytophthora*. **M. Ojika***, R. Iwai, C. Han
14:05 – 866. Measurements of nitrous acid (HONO) direct emission from rice paddy soil and its contribution to atmospheric HONO. **C. Minejima***, R. Nakane, K. Shimada, S. Riya, K. Sato, M. Ohyama, A. Terada, M. Hosomi

Hilton Waikiki Beach
Kauai

Enzymes Essential to Biosphere Health: Bioremediation and Biogeochemical Cycling (#219)

Organized by: L. Eltis, M. Fukuda, L. Wackett

13:00 – 867. Haloalkane dehalogenases in bacteria. **Y. Nagata***, R. Moriuchi, Y. Ohtsubo, M. Tsuda
13:25 – 868. New chemistry in biodegradation of (halogenated) aromatic compounds. **D. Leys***
13:50 – 869. Kinetic, mechanistic, and structural characterization of three hydratase/aldolases in polycyclic aromatic hydrocarbon degradation: Analysis and Implications. **C.P. Whitman***, W.H. Johnson, W. Li, Y. Zhang
14:15 – 870. Bacterial phosphate uptake: Sub-Angstrom insights into exquisite molecular discrimination. R. Qi, A. Wellner, D.S. Tawfik, **m. elias***

*** Principle Author**

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Microtiter plate based colorimetric assay for characterization of dehalogenation activity of GAC/Fe^0 composite

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ABSTRACT

Even though nanoscale zero valent iron (nZVI) has been intensively studied for the treatment of a plethora of pollutants through reductive reaction, a quantification of nZVI reactivity has not been standardized. Here, we developed series of colorimetric assays for determining reductive activity of nZVI and its composite with granular activated carbon (GAC). The assay focused on analysis of reaction products rather than its mother compounds, which gives more accurate quantification of reductive activity. The colorimetric assays were developed to quantify three reaction products, ammonia, phenol, and aniline, generated as results of reduction of nitrate, halophenols, and nitrobenzene, respectively. The color reactions are simple and versatile since same types of reagents are able to be applied for all reactions. The colorimetric assays were further miniaturized and optimized into 96-well microplate having 230 µL of sample volume and 2 h of reaction time. The three groups of compounds, nitrate, nitrobenzene, and para-positioned halogenated phenols, showed graduated reactivity and were possible to distinguish a reaction mechanism between normal reduction and catalytic behaviour of second metal. The applicability was successfully proven by determining reactivity of GAC/Fe(0) composite prepared in various reduction conditions. It was shown that reactivity of GAC/Fe(0) was significantly influenced by reduction conditions, i.e. pH and reduction time, and addition of second metal further increased its reactivity. The preliminary results of GAC/Fe(0) reactivity obtained by suggested assay would be useful to determine suitable reaction condition for remediation work and estimate efficiency and required time. Therefore, suggested reactivity test with different compound combined with multiwell microplate based color assay will be useful and simple tool in various nZVI related research topics, e.g. different stabilization, immobilization, etc.